



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,976	01/03/2002	Naoki Nishida	15162/04220	7848
24367	7590	02/03/2004	EXAMINER	
SIDLEY AUSTIN BROWN & WOOD LLP			LEE, JOHN D	
717 NORTH HARWOOD			ART UNIT	
SUITE 3400			PAPER NUMBER	
DALLAS, TX 75201			2874	

DATE MAILED: 02/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/037,976

Applicant(s)

NISHIDA ET AL.

Examiner

John D. Lee

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 14-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Applicant's communication filed on November 11, 2003, has been carefully studied by the Examiner. The arguments advanced therein, considered together with the amendments made to the claims, are persuasive and the rejections set forth in the previous Office action are withdrawn. In view of further search, however, and the consequent discovery of relevant prior art documents, new rejections are set forth below. This action is **not** made final.

Claims 1, 12, and 15 are objected to for the following minor informalities. In line 4 of amended claim 1, and in line 6 of amended claim 15, the term "a plurality of switching positions" should be changed to "a plurality of switching portions" in order to agree with the terminology used in respectively succeeding claims. In claim 12, line 2, "the fluid" should actually be "the liquid". Appropriate correction is required.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,360,775 to Barth et al (newly cited). Barth et al discloses a fluid-controlled switching device which can be adapted as an optical switch. A small pump (i.e. a micropump) applies pressure to a liquid in a groove or capillary to move a switching member (a bubble of a specified second fluid) into and out of desired optical switching positions. Barth et al discloses that the groove or capillary switching arrangement is designed to work with an intersecting optical waveguide array, and also generally applies to all optical switching arrangements. See column 11, line 16

ff, of the Barth et al reference. Since the Barth et al micropump is piston-based, the use of a piezoelectric element therein would certainly have been obvious. The micropump appears to have no valve. The first and second fluids in the Barth et al switch also are individually specified, so it is readily apparent that they have different refractive indices.

Claims 1-8 and 14-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0044721 A1 to Bjorklund (already of record) in view of U.S. Patent 6,360,775 to Barth et al (newly cited). Bjorklund discloses an optical switch (figure 2) for changing over a running direction of a plurality of different wavelengths ( $\lambda_1$ - $\lambda_n$ ) of light passing through an optical waveguide between a first direction and a second direction, the optical switch comprising: a switching member 47 disposed on an optical path of the optical waveguide, the switching member having a plurality of switching portions (disposing different 47'-47'''' in the waveguide path) for selectively guiding each of the plurality of different wavelengths of light independently into one of the first direction 35 and the second direction 33, depending on a position of the switching member. Bjorklund's disclosure further shows that the plurality of switching portions includes a first switching portion 47' and a second switching portion 47'', wherein the first switching portion is for guiding lights of first ( $\lambda_1$ ) and second ( $\lambda_2$ ) wavelengths into the first and second directions, respectively, and wherein the second switching portion is for guiding lights of the first ( $\lambda_1$ ) and second ( $\lambda_2$ ) wavelengths into the second and first directions, respectively. Bjorklund also discloses that the switching portions include a third switching portion 47''' for guiding lights of the first and second wavelengths into one of the first and second directions. Bjorklund further discloses that the switching member is configured to move (figure 2) within a groove intersection with the optical waveguide. Bjorklund still further

Art Unit: 2874

discloses that the plurality of switching portions are interference filters (paragraph [0050]). Bjorklund does not explicitly state that the groove can be filled with liquid or that the switching member is moved by applying pressure to a liquid in the groove. Barth et al, however, clearly describes that the type of optical switch utilizing a switching member movable by applying pressure to a liquid in contact with the switching member is well known (see the immediately preceding rejection). One of ordinary skill in the art would have found it obvious to use the type of switch disclosed by Barth et al in implementing the wavelength selective optical switch of Bjorklund, due first of all to the similarities in structure of the two devices, and secondly because the Barth et al arrangement provides fast, easy, and accurate movement of the switching member.

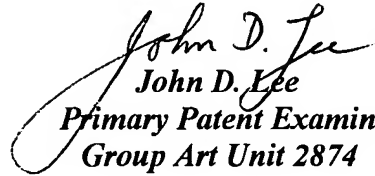
Applicant's arguments filed November 11, 2003, with respect to the above-rejected claims, have been fully considered but are moot in view of the new grounds of rejection.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Application Publication 2002/0076140 A1 to Kobrin shows and describes a MEMS optical switch which utilizes a micropump to provide pneumatic actuation of the MEMS switching element.

Any inquiry concerning the merits of this communication should be directed to Examiner John D. Lee at telephone number (571) 272-2351. The Examiner's normal work schedule is Tuesday through Friday, 6:30 AM to 5:00 PM. Any inquiry of a general or clerical nature (i.e. a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956, to the technical support staff supervisor (Team

Art Unit: 2874

2) at telephone number (571) 272-1615, or to the Technology Center 2800 Customer Service Office at telephone number (571) 272-1626.

  
**John D. Lee**  
**Primary Patent Examiner**  
**Group Art Unit 2874**